AUGMENTING FLEET ASW CAPABILITIES BY RELYING ON GREATER NAVAL RESERVE ACTIVITY

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The Navy is in the process of upgrading its antisubmarine warfare (ASW) capabilities by converting to the improved LAMPS MARK III ASW helicopter system. It will continue to operate the LAMPS MARK I system through the remainder of the century, though the Navy plans no purchases of the LAMPS I helicopter--the SH-2F--beyond 1985. Also, beginning in 1984 the Navy intends to transfer the first of a total of 24 SH-2F helicopters to the Naval Reserve for use on reserve frigates.

This paper outlines alternative ways to augment fleet ASW capabilities over the next several years by relying to a greater extent on the use of Naval Reserve forces. In general, these alternatives would continue purchases of the SH-2F beyond 1985 and place these aircraft directly into the reserve program. Thus, these alternatives would also establish a new pattern for Naval Reserve ASW squadrons by having reserve helicopters augment operations on active combatants in time of emergency. For ships able to operate two helicopters, a second, reserve LAMPS I would augment the active-duty helicopter routinely assigned to the combatant in peacetime. Other reserve LAMPS I helicopters would be assigned to ships not normally carrying LAMPS. This is consistent with Navy Secretary

Lehman's call for improved "horizontal integration" of active and reserve forces.

BACKGROUND

The Navy provides ASW protection for the fleet through layered defenses. Medium-range defense relies on surface combatants towing passive sonar receivers (Tactical Towed Array Sonars, or TACTAS). If a submarine is detected, an onboard ASW helicopter would fly out, find the target, and destroy it with torpedoes. The entire system of shipboard electronics and ASW helicopters is known as the Light Airborne Multipurpose System (LAMPS). The latest version, known as LAMPS III, not only provides additional capability in the shipboard systems but also extends significantly the useful range of the system by incorporating a more capable and autonomous helicopter, the SH-60B.

For 12 years, the Navy has operated the SH-2F Sea Sprite helicopter as part of the LAMPS I system. This year the first of a new helicopter fleet--the SH-60B or LAMPS III--will enter fleet operations. The SH-60B (a modified form of the Army's UH-60A Blackhawk) is a substantially larger helicopter with greatly improved range and payload characteristics and improved mission electronics. The Navy plans to terminate LAMPS I

procurement after fiscal year 1985, buying only the larger LAMPS III helicopters thereafter. Table 1 shows the Navy's LAMPS helicopter procurement plans for the next six years.

Because the SH-60B is significantly larger than the SH-2F and because the LAMPS III system incorporates more sophisticated shipborne electronics, the Navy must convert a significant number of existing surface combatants to handle the LAMPS III system. (All combatants except the new DDG-51 purchased after fiscal year 1980 are LAMPS III capable.) The conversion costs per ship will average about $14 million over all ship types (fiscal year 1985 dollars), with LAMPS III-specific hardware for the ships averaging about $7 million. Table 2 shows the Navy's conversion plans for the next ten years.

SHORTFALLS IN ASW HELICOPTER COVERAGE

Although the Navy has an ambitious modernization program in progress, it will continue to be short of of ASW helicopter protection for the fleet over the next several years. Two relatively straightforward ways of measuring and comparing the level of such protection are the fraction of ships that would have a helicopter available to them in time of national emergency--or the ASW helicopter "coverage"--and the fraction of

shipboard helicopter carrying capability ("deck spots") that could be filled in such a situation--or the helicopter "density." 1/ This latter measure is of interest because many larger surface combatants are designed to carry two or more ASW helicopters.

Table 3 summarizes how the Administration's helicopter procurement and ship conversion plans would affect these coverage and density measures. For example, while over the next ten years the Navy should have no trouble placing at least one LAMPS III helicopter on appropriately equipped ships, it will have insufficient LAMPS I helos to meet this criterion even though substantial numbers of ships are to be converted from LAMPS I to LAMPS III. In terms of helicopter density, about two-thirds of all deck spots for both LAMPS I and LAMPS III could be filled by 1990, with the LAMPS III levels continuing to improve through the early 1990s. The difference between helicopter coverage and density might be thought of in terms of the operational flexibility available to the Navy to give multi-helicopter ships more than one helicopter consistent with the tactical situation, without having to leave some LAMPS-capable units unprotected.

Modest Contribution Provided by Naval Reserve

As Table 3 indicates, the Naval Reserve will provide a modest contribution--approximately 14 percent of ASW coverage and 10 percent of ASW density--through this period. As noted earlier, the Naval Reserve will be given 24 SH-2F helicopters beginning in 1984 for use aboard 24 frigates in or scheduled to be delivered to the NRF. Table 4 shows current plans for SH-2F transfers to the Naval Reserve.

ALTERNATIVE PLANS TO IMPROVE FLEET ASW COVERAGE

Fleet ASW coverage could be expanded by continuing purchases of modified LAMPS I helicopters and assignment of these aircraft to the Naval Reserve. Specifically, both alternatives examined below would extend purchases of the SH-2F for five years at a rate of 12 helicopters per year. These aircraft would be purchased with improved engines that would greatly improve their range and payload characteristics, allowing routine operations in the second convergence zone (60-70 miles from the ship). 2/

Alternative 1: Purchase Additional SH-2F Helicopters for the Naval Reserve

This alternative would begin purchase of 60 additional SH-2Fs in 1986, with aircraft entering the fleet beginning in 1988 (see Table 1). Table 3 shows that such a plan would allow single-helicopter coverage of all LAMPS I ships by 1990 and enough LAMPS I helos to fill each available deck spot by the mid-1990s. This expansion of fleet ASW capability would result from the increasing responsibility assumed by the Naval Reserve. Under this alternative, reserve squadrons would provide over one-third of ASW helicopter coverage and about one-fourth of ASW helicopter density beginning in the late 1980s. This would represent a significant increase in both numbers and missions from current Administration plans.

In the 1985 DoD Authorization bill both the House and the Senate acted to increase SH-60B helicopter purchases from 18 per year--as requested by the Administration--to 24 per year. Both houses note that the higher rate would be more efficient and provide a better match between available ships and helicopters. Table 3 shows how LAMPS III helicopter protection would improve should these recent actions to accelerate SH-60B procurement be extended through the remainder of the SH-60B buy.

Table 5 indicates that the additional cost of Alternative 1 over the next six years would be about $900 million relative to the President's budget submitted in February 1984 (including about $9 million in fiscal year 1984). This includes recurring annual operating and support (O&S) costs of about $5 million for each new reserve LAMPS I squadron. It is assumed that the additional aircraft would be organized into squadrons of 12 each along with a similar reorganization of already programmed reserve SH-2F helicopters (see Table 4). This would necessitate the addition of two basing sites to the three already chosen: San Diego, California; South Weymouth, Massachusetts; and Willow Grove, Pennsylvania. 3/

Alternative 2: Add Reserve SH-2s and Modify Ship Conversion Schedules

It may be possible to offset some of the costs associated with augmenting reserve ASW capabilities by modifying current Navy plans for converting certain ships from LAMPS I to LAMPS III capability. If done judiciously, such a modification might also improve the match between helicopter and ship availability. More specifically, this alternative would delay the LAMPS III conversion of seven DD-963 class destroyers--scheduled for overhaul in fiscal years 1985 and 1986--until their next regular overhauls, as well as forgo the conversion of nine FFG-7 class frigates.

Purchase of additional SH-2Fs and their assignment to the Naval Reserve would be as in Alternative 1.

Because LAMPS III helicopters would not have to be spread as thinly over the fleet (with several deck spots delayed or forgone), there would be more SH-60Bs per available LAMPS III ship. For example, Table 3 shows that both LAMPS III coverage and density would increase significantly relative to Administration plans. On the other hand, those gains would come at the expense of more modest improvements in LAMPS I coverage and density than under the first alternative.

Continued purchase of SH-60Bs at 24 per year would provide one SH-60B per available deck spot by 1990. With or without this accelerated buyout, the contribution of the Naval Reserve to total ASW coverage and density would be the same as in Alternative 1.

Total net costs over the next six years would be about $710 million, some $190 million less than Alternative 1 (see Table 5). Also, about $34 million would have to be spent outside the period to finance the delayed conversions of DD-963 class destroyers. Most of the true offsetting savings would come from forgoing the nine conversions of FFG-7 frigates, with these savings occuring later in the 1980s. 4/

Other Considerations for the Alternatives

Central to both alternatives is a new pattern for the use of Navy Reserve forces. By current Navy plans, reserve forces would operate SH-2F helicopters exclusively from Naval Reserve frigates (and potentially from Coast Guard cutters in time of emergency). The alternatives discussed above, however, would field new Naval Reserve ASW squadrons that, in time of war, would provide a second ASW helicopter aboard many active combatants, complementing the active SH-2F helicopter routinely assigned to the ship in peacetime. This "roundout" concept is in line with Secretary Lehman's campaign for improved "horizontal integration" of active and reserve component forces.

There are, of course, some potential difficulties with the addition of SH-2Fs to the reserves. Some, for example, have questioned the proficiency of reserve pilots operating with active ships in peacetime drills and exercises. Indeed, some have pointed to a problem in securing adequate numbers of reserve pilots for an expanded reserve helicopter fleet.

Then there are those who would rather see additional funds, if available, used to buy more SH-60B helos or buy them sooner. The SH-60B is superior to the SH-2F on an aircraft-to-aircraft basis, and the LAMPS III system provides significant capability upgrades over the LAMPS I system.

For example, the upgraded SH-2F discussed here might not be able to fully realize its added range/payload capability because of certain inherent data handling limitations of the LAMPS I system. Thus in considering the alternative of forgoing some FFG-7 ship conversions to offset the purchase of more LAMPS I helicopter, many note that the reliance of the FFG-7 class ship on the LAMPS system for its viability as an ASW weapons system increases the need for the most capable system available. This would argue for continuing with Administration plans to convert these ships to LAMPS III capability. In short, numbers alone may not provide a complete picture of overall shipboard ASW helicopter capability.

FOOTNOTES

1. Calculations of helicopter availability include allowances for attrition, training, and maintenance "pipeline" aircraft. Surface fleet helicopter capacity is based on the assumption that about 85 percent of the fleet could be put to sea in an emergency (thus allowing for ships disabled for overhaul). The Navy uses a somewhat more complex method for estimating helicopter needs based on specific scenarios and the roles of various ships in those scenarios.

2. The engine would be the General Electric T-700 engine, the same engine used on the SH-60B LAMPS III helicopter. The Navy indicates that an FY 1986 production start would result in some concurrency between testing and production and would increase the total procurement costs by $73.3 million.

3. Potential additional sites might be Norfolk, Virginia and Jacksonville, Florida because of proximity to active SH-2F squadrons. This would minimize maintenance difficulties and reduce the need for military construction.

4. Because much of the shipboard equipment associated with these nine conversions has already been purchased, savings would accrue from substitution of these equipment sets for sets to be purchased later in the 1980s to convert the remaining DD-963 class destroyers. Although the estimates of costs and savings associated with other aspects of Alternatives 1 and 2 are based on data provided by the Navy, CBO relied on informal estimates for the savings associated with FFG-7 conversions.

TABLE 1. NAVY ASW HELICOPTER PROCUREMENT PLANS: FISCAL YEARS 1985-1990

	1985	1986	1987	1988	1989	1990
Navy Plans						
Procurement						
SH-60B Seahawk LAMPS III	18	18	18	18	18	18
SH-2F Sea Sprite LAMPS I	6	0	0	0	0	0
Available Forces (PAA) a/						
SH-60B	19	32	44	51	64	76
SH-2F	78	85	90	87	86	83
Alternatives 1 and 2						
Procurement						
SH-60B Seahawk LAMPS III	18	18	18	18	18	18
SH-2F Super Sea Sprite LAMPS I	6	12	12	12	12	12
Available Forces (PAA) a/						
SH-60B	19	32	44	51	64	76
SH-2F	78	85	90	92	101	109

a. Primary Authorized Aircraft; includes allowances for attrition, maintenance "pipeline", and training aircraft.

TABLE 2. NAVY ASW SHIP CONVERSION PLANS AND PLAN OF ALTERNATIVE 2
(Cumulative at end of fiscal year)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Navy Plan											
FFG-7											
LAMPS I capable	26	25	20	16	16	16	16	16	16	16	16
LAMPS III capable a/	18	22	26	31	35	35	35	35	35	35	35
DD-963											
LAMPS I capable	28	24	20	12	9	3	0	0	0	0	0
LAMPS III capable	1	3	7	11	19	22	28	31	31	31	31
Alternative 2											
FFG-7											
LAMPS I capable	26	25	25	25	25	25	25	25	25	25	25
LAMPS III capable	18	22	25	25	26	26	26	26	26	26	26
DD-963											
LAMPS I capable	31	31	27	19	16	7	3	0	0	0	0
LAMPS III capable	0	0	0	4	12	15	24	28	31	31	31

a. All FFG-7 frigates ordered after 1980 are LAMPS III capable.

TABLE 3. SUMMARY OF LAMPS COVERAGE MEASURES FOR ADMINISTRATION PLAN AND ALTERNATIVES.

	COVERAGE (Percentage of ships with at least one helo)			DENSITY (Percentage of deck spots filled)		
	1985	1990	1995	1985	1990	1995
ADMINISTRATION PLAN						
LAMPS MK I	67	84	77	53	67	62
LAMPS MK III	112	115	140	58	67	83
Reserve Contribution	12	15	13	9	10	9
ALTERNATIVE 1 (With accelerated SH-60B buy)						
LAMPS MK I	67	110	127	53	88	102
LAMPS MK III	112 (112)	115 (144)	140 (138)	58 (58)	67 (83)	83 (81)
Reserve Contribution	12	36	34	9	25	23
ALTERNATIVE 2 (With accelerated SH-60B buy)						
LAMPS MK I	66	98	116	52	75	89
LAMPS MK III	119 (119)	123 (183)	157 (153)	59 (59)	84 (104)	94 (93)
Reserve Contribution	12	36	34	9	25	23

TABLE 4. NAVAL RESERVE ASW FORCES: NAVY PLANS AND ALTERNATIVE (Cumulative totals at end of fiscal year)

	1985	1986	1987	1988	1989	1990
Navy Plans						
SH-2F PAA	16	24	24	24	24	24
HSL Squadrons	2	3	3	3	3	3
Alternatives 1 and 2						
SH-2F PAA	16	24	36	48	60	60
HSL Squadrons	2	2	3	4	5	5

TABLE 5. COSTS OF ALTERNATIVE PLANS, RELATIVE TO PRESIDENT'S FEBRUARY 1984 BUDGET (Millions of fiscal year 1985 dollars)

	1984	1985	1986	1987	1988	1989	1990
Alternative 1							
Costs							
Additional SH-2F a/	9	55	209	180	139	131	114
Added Reserve SH-2F Squadrons (O&S Costs)	-	-	5	10	16	17	17
Total Costs	9	55	214	190	155	148	131
Alternative 2							
Costs							
Additional SH-2F a/	9	55	209	180	139	131	114
Added Reserve SH-2F Squadrons (O&S Costs)	-	-	5	10	16	17	17
Savings							
Delay DD-963 conversions	-	-57	-54	13	44	0	23
Avoid FFG-7 conversions	-	-	-7	-91	-67	-	-
Total Cost	9	-2	153	112	132	148	154

a. Costs assume installation of the T-700 engine. Costs include R&D that the Navy states will be incurred if the T-700 engine is installed (the Navy estimates R&D costs of $37.3 million over 3 years; CBO spread these costs equally over the 1985-1987 period). Costs also include additional procurement funding that the Navy states is required if production is to begin in 1986 (the Navy indicated additional funding of $73.3 million would be required over three years; CBO spread these costs equally over the 1985-1987 period). Without further information from the Navy, CBO cannot assess the need for this additional funding to insure production in 1986. Without this additional procurement funding, costs for Alternative 1 would amount to about $31 million in 1985 (instead of $55 million) while savings under Alternative 2 would amount to $26 million in 1985 (instead of $2 million).